

# MARINE REVIEW.

VOL. X.

CLEVELAND, O., DECEMBER 6, 1894.

No. 23.

## Contracts for New Ships.

A SUMMARY OF WORK BEING PLANNED FOR LAKE SHIP YARDS—ORDERS SUFFICIENT TO CAUSE MORE ACTIVITY THAN FOR TWO YEARS PAST.

Nineteen ships of an estimated value of \$2,870,000 are now either under contract in lake ship yards, or negotiations for their construction are so far advanced that it is quite certain they will be built to go into commission as early as possible next season. Others are contemplated but not included in the list that appears herewith, on account of uncertainty regarding their construction. This is the season for letting contracts with ship builders on the lakes, and it would seem that the ship yards are to have more work than was expected. The principal new work is of course in big steel freight carriers that are expected to earn fair dividends on a freight basis that would not permit of the operation of vessels of the smaller and older class.

Probably the most important announcement regarding new freight steamers is contained in a request sent to builders, a few days ago, by the Minnesota Steamship Company of Cleveland for plans and bids on a steel steamer of 400 feet keel, 48 feet beam and 28 feet depth, as well as two schooners, or tow barges, of 8 feet more keel than the two schooners now building for the same company at South Chicago. Of course it is not absolutely certain that these boats will be built, but an order of this kind from the Minnesota company would not be at all surprising, as with ten big steel steamers and one tow barge that are now in commission and practically under the control of the Minnesota Iron Company, that company has not been able to carry more than probably 60 per cent of its own ore during the past season. One other item in the table that follows may need explanation. Capt. James Davidson of West Bay City has let contracts for engines for only two big wooden steamers, but he is understood to have made preparations for building at least three boats on his own account and probably more. He is put down in the list for three boats. It will be noted that in the table the estimated capacity is put down in net tons and on a basis of 16 feet draft, and the estimates are in round numbers, the whole matter being intended simply as a summary of more definite statistics that will appear in the REVIEW later on:

	Capacity, estimated, net tons, extreme draft.	Value estimated.
Minnesota Steamship Company, Cleveland—Steel steamer 400 feet keel, 48 feet beam and 28 feet hold; contract not yet awarded.....	6,000	\$225,000
Minnesota Steamship Company, Cleveland—Two steel schooners, each 310 feet keel; contract not yet awarded.....	7,600	180,000
Minnesota Steamship Company, Cleveland—Two steel schooners under contract with Chicago Ship Building Company; each 302 feet keel....	7,400	170,000
James Davidson, West Bay City, Mich.—Three wooden steamers of dimensions equal to largest ships of this class; on builder's account,....	10,500	435,000
M. M. Drake and others, Buffalo, N. Y.—Steel steamer under contract with Cleveland Ship Building Company; duplicate of the steamer I. W. Nicholas.....	4,000	155,000
Capt. John Mitchell and others, Cleveland, O.—Steel steamer under contract with F. W. Wheeler & Co., West Bay City, Mich.....	4,000	165,000
Abram Smith & Co., Algonac, Mich.—Wooden steamer, 200 feet keel; on builder's account....	1,500	70,000
Jenks Ship Building Company, Port Huron, Mich.—Wooden steamer, 210 feet keel; on builder's account.....	1,500	70,000
C. R. Jones and others, Cleveland—Wooden steamer, 185 feet keel, under contract with Detroit Dry Dock Company.....	1,350	70,000
Northern Steamship Company, Buffalo, N. Y.—Twin-screw steel passenger steamer North Land, under contract with Globe Iron Works Company, Cleveland.....		700,000

Cleveland and Buffalo Transit Company, Cleveland—Side-wheel steel steamer of large dimensions and modern equipment; contract not yet awarded.....	300,000
Northern Transportation Company, Owen Sound, Ont.—Large passenger steamer under contract with Owen Sound Ship Building and Dry Dock Company.....	200,000
A. Wehrle, Sandusky, O.—Passenger boat hull, steel, to which engines of old steamer City of Sandusky are to be fitted by Detroit Dry Dock Company.....	70,000
George T. Arnold Transportation Company of St. Joseph, Mich.—Wooden passenger boat of 120 feet keel, under contract with Edwin Heath, Benton Harbor, Mich.....	50,000
Connable Fishing Company, Petoskey, Mich.—Harbor tug of 90 feet keel.....	10,000
Total.....	43,850 2,870,000

In the above table there are thirteen freight boats of 43,850 net tons capacity in all and a total valuation of \$1,540,000, and six passenger boats and a harbor tug having an additional estimated value of \$1,330,000. The passenger boats include the big northern line steamer North Land, which is being built by the Globe Iron Works Company of Cleveland, and which was begun last year but not completed.

Although quite a list of new orders is here shown, the total does not by any means compare with orders booked by ship builders on Dec. 1 in years of extensive building. In 1887, for instance, the number of contracts noted on Dec. 1 was sixty, the capacity of ships 108,525 gross tons and the valuation \$8,325,000; in 1888 the number was fifty-nine, capacity 100,950 gross tons and valuation \$7,124,000, and in 1889 the number was fifty-six, capacity 124,750 gross tons and valuation \$7,866,000. On Dec. 1 of last year the number of ships under contract was 28, but they were largely of the smaller class, excepting the North West and North Land, and their capacity was only 26,400 tons, with a total valuation of only \$2,538,500, including heavy values attached to the two big passenger boats just referred to.

In addition to vessels noted in the above summary, there has been talk for some time past of new passenger boats for both the Goodrich and Graham & Morton transportation companies, operating on Lake Michigan. The Mutual Transportation Company, controlled by members of the firm of M. A. Hanna & Co., Cleveland, have also been considering the building of a boat, but in event of any part of the Minnesota company's order going to the Globe Iron Works Company, it is probable that the Mutual boat would be delayed for another season. Mr. M. A. Bradley, who is interested in the Cleveland Ship Building Company, has also considered the question of building, but action on his part may also be delayed if the Cleveland company secures any work in addition to the new boat, a duplicate of the I. W. Nicholas, for which a contract with M. M. Drake of Buffalo, and others, was closed on Saturday last.

## The New Navy—A Summary of the Ships.

With the opening of a session of congress that finds work almost completed on all naval vessels now under contract, it may be of interest to again sum up the United States naval force. There are now in commission or actually under construction forty-five vessels of the new navy. The total displacement of all these vessels is 180,478 tons. They carry ninety 4-inch, sixty-eight 5-inch, 126 6-inch, sixty-six 8-inch, twenty-two 10-inch, twelve 12-inch and twelve 13-inch rifles, making 396 guns in all. In addition to these they carry 550 small rapid-firing guns and three 15-inch dynamite guns. The vessels are: Twelve gunboats, Petrel, Yorktown, Concord, Bennington, Machias, Castine, Penguin, Albatross, Porpoise, Detroit, Montgomery, and Marblehead; ten protected cruisers, Atlanta, Boston, Chicago, Charleston, Baltimore, Newark, San Francisco, Philadelphia, Raleigh, Cincinnati; three first-class protected cruisers, Columbia, Minneapolis and Olympia; three armored cruisers, New York, Brooklyn and Maine; five battle ships, Indiana, Massachusetts, Oregon, Iowa and Texas; six monitors, Puritan, Miantonomah, Terror, Amphitrite, Monterey and Monadnock; four special types, Dolphin, Vesuvius, Katahdin and Bancroft; two first-class torpedo boats, Cushing and Ericsson.



### More Flattering Notices.

Even from Mrs. Cleveland at the executive mansion, Washington, the REVIEW has received acknowledgement of the receipt of a copy of the issue devoted to the launch of the American Line steamer St. Louis and proceedings of the meeting of marine engineers and naval architects in New York. A copy of the paper was forwarded to Mrs. Cleveland, simply on account of the engravings which it contained of the boat she had christened, but it was evidently received with more appreciation than was expected, as a note from one of the secretaries at the White House says: "Mrs. Cleveland directs me to acknowledge the receipt of a copy of the MARINE REVIEW which you were kind enough to send her. Your thoughtfulness and courtesy are very gratifying." From other trade publications and from advertisers, we have also received flattering notices, notably one from the American Shipbuilder of New York, and as it would hardly be fair to allow recognition of this kind to pass without directing the attention of our friends at home to it, a few of the notices are reproduced here:

Washington L. Capps, secretary Society of Naval Architects and Marine Engineers: "I congratulate you on the concise and accurate account of our meeting."

Williamson Bros., manufacturers of auxiliary machinery for ships, Philadelphia, Pa.: "We must congratulate you on the able manner in which you covered the proceedings of the meeting in New York, and notice that you have done more than any of the other papers, by not only including the papers but also the general outline of the discussions."

Iron Trade Review, Cleveland, O.: "Our wide awake contemporary, the MARINE REVIEW, signalized the launching of the St. Louis and the second annual meeting of the Society of Naval Architects and Marine Engineers with a double number that fully reported both events and gave a magnificent array of engravings—views of the St. Louis and other vessels at the Cramp yards, and portraits of the officers of the naval society. A new heading was an added attraction and an index of appreciative constituents."

American Shipbuilder, New York, N. Y.: "The double number (Nov. 15 and 22) of the MARINE REVIEW, Cleveland, O., is a publication of which the great lakes may well feel proud. The paper contains forty-four pages of reading matter and advertisements, also four elegant supplements, (which are well worth framing) 21 inches long by 14½ inches wide, printed on superfine paper, representing the new steamer St. Louis; views in Cramps' yard in connection with the construction of the St. Louis and St. Paul, including the cast steel shaft strut for the former steamer (weighing 68,000 pounds; the steamboat Priscilla, and the battle ship Oregon; two very large portraits of C. A. Griscom and Chas. H. Cramp, also excellent half-tone cuts of Philip Hichborn, Francis A. Walker, Geo. W. Melville, Wm. H. Webb, Rear Admiral Richard W. Meade, Geo. W. Quintard, C. H. Loring and Geo. W. Dickie, all vice-presidents of the Society of Naval Architects and Marine Engineers. No such supplements as these have ever been published by any marine paper in the United States or Great Britain, and they have only been equaled by those which Engineering of London produced when the Campania was built. The MARINE REVIEW has fairly outdone itself in the pictorial line, and its small, neat new heading looks more ship-shape than the one it has carried since it first braved the fresh waters of the lakes. The American Shipbuilder feels above the small and petty jealousy shown by the marine papers of this country toward each other, hence this extended notice of a deserving contemporary. We shall not 'damn by faint praise' the splendid achievement of Mulrooney & Barton, the REVIEW's editors and proprietors."

### Preparations for a Big Meeting in Detroit.

Secretary C. H. Keep of the Lake Carriers' Association was in Cleveland, Monday, in consultation with President James Corrigan and Treasurer George P. McKay. Mr. Keep is preparing the annual report of the managers of the association, and from present indications the meeting, which is to open at the Cadillac, Detroit, on Tuesday, Jan. 8, will be the largest ever held by lake vessel owners. Arrangements are being made for several sessions, extending over two or three days, with a view to securing full discussion on matters pertaining to leading river and harbor improvements, as well as the affairs of the association that are of direct interest to the members.

At a meeting of the legislative committee of the association in Buffalo, a few days ago, at which Mr. Corrigan was present, it was decided to immediately petition the government to determine the amount of the outflow of water from Lake Michigan that will be occasioned by the opening of the Chicago drainage canal, and to take steps to control the outflow and limit its amount if there is any danger of lake commerce suffering on account of a lowering of lake levels. This subject, which has been a theme for discussion since it was first proposed to build the Chicago canal, will undoubtedly demand considerable attention at the meeting.

The vessel owners will take no part in approving or disapproving any of the several Canadian or American plans for a ship-canal from the lakes

to the Atlantic sea-board, as many of the members of the association look upon the big ship-canal schemes as impracticable, or at least of no commercial value, and it is the general opinion that the association has too much in the way of improvements on the lakes demanding immediate attention to give up time at an annual meeting to a matter that pertains to the distant future.

A firm stand will undoubtedly be taken in urging all possible haste with the completion of the new lock at Sault Ste. Marie. In accordance with the opinion held by the government engineers, endorsement will be given to plans for widening the Hay lake channel, Lime-Kiln crossing and other channels in the connecting waterways between Lake Michigan and Lake Erie.

In view of the persistent refusal of New York state to spend any more money in improving the Erie and other canals of that state, it is probable that the question of recommending that the general government be given control of the New York canals, on the understanding that they shall be improved and maintained in a proper manner, will come up. Lake vessel owners are not of the opinion that the New York canals will be improved on account of the canal amendment having carried at the last election. The amendment was carried for the reason that only about one-third of the electors, who were mostly interested in the canals, voted on it, and anyhow it is no way binding or significant of opinion prevailing throughout the state. Executive officers of the association are of the opinion, therefore, that a recommendation from the Lake Carriers at this time favorable to government control of these canals would have some weight, especially as citizens of the state of New York are constantly growing more restive under the burden of maintenance and as each new state engineer proposes changes in schemes recommended by his predecessors. On the other hand it is probable that action of the kind referred to on the part of the Lake Carriers would be taken by the ship canal advocates as implying only a moderate improvement of the Erie canal, in event of that waterway passing into the hands of the general government, and would be opposed on that account. If this subject is brought up in Detroit, it may result in extended discussion.

Secretary Keep and Capt. McKay have been in correspondence for some time past with keepers of life saving stations, light-keepers, vessel owners and masters, from whom a great deal of information has been secured relative to accidents in parts of the lakes where it is thought that the lighting and buoying of channels and coasts is insufficient, and as indicated by the appropriation estimates submitted to congress from the treasury department on Monday last, nearly all of the aids to navigation asked for by the association several weeks ago have been urgently recommended.

### Quadruple Engines of 7,500 Horse Power.

An engraving on the opposite page represents probably the largest set of quadruple expansion engines yet constructed—those made by the Fairfield Shipbuilding and Engineering Company of Govan, Scotland, for the steamer Tantallon Castle, a ship of 5,800 gross tons register and measuring 455 by 51 by 35 feet. Boilers are of the ordinary multitubular marine type, but adapted for a working pressure of 200 pounds per square inch. Economy was the primary consideration that led to the adoption of engines of this type, as the number of passengers in the South African trade is not sufficient to warrant the construction of vessels for passenger service only. Between 16 and 17 knots is considered satisfactory in the trade, alike from an economy point of view and from that of passenger demands, and that rate of speed is expected from the boat.

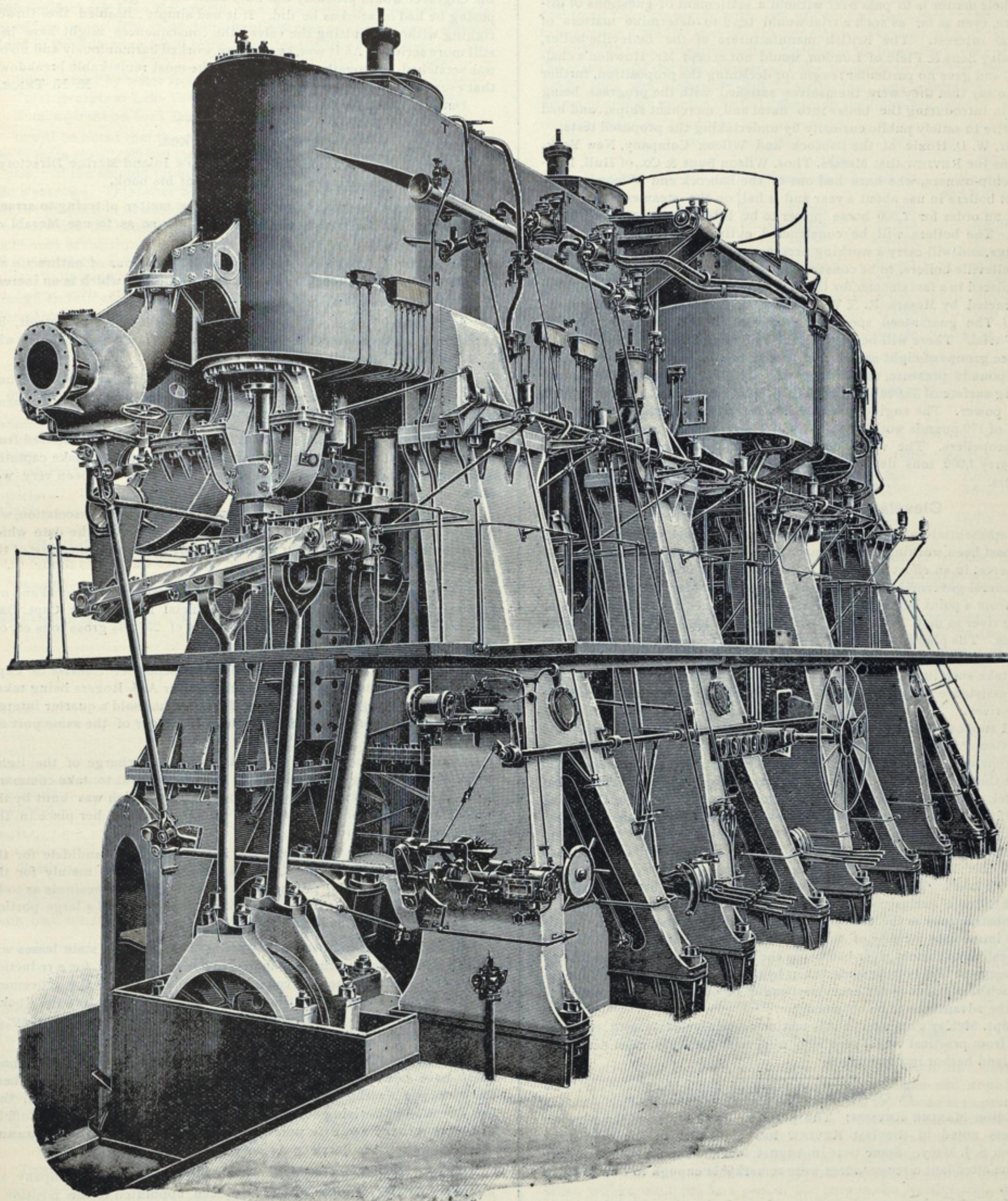
The engines, which are described very fully in Engineering of London, issue of Nov. 23, 1893, and from which the engraving is reproduced, were designed to develop 7,500 horse power. They are arranged with the high pressure cylinder at the forward end, next to the first intermediate, then the low pressure, and the second intermediate at the after end. The high pressure cylinder is 33½ inches in diameter, the intermediate pressure 49 inches, the second intermediate pressure 67 inches and the low pressure cylinder 98 inches, all adapted for a stroke of 5 feet 6 inches. The high pressure and first intermediate pressure cylinders are each fitted with a piston valve, and the second intermediate and low pressure cylinders are each fitted with a double-ported slide valve, all being worked by the usual double eccentrics and link motion valve gear. The engines are fitted with an automatic steam reducing valve, and steam and hydraulic direct-acting reversing engine. The crankshaft is in four pieces, each piece being built, and, together with the thrust, tunnel, and propeller shafts, are forged of mild ingot steel. The crankshaft is 20½ inches in diameter, the thrust shaft 20½ inches in diameter, and the propeller shaft 21 inches. There are eleven thrust rings, of the ordinary horseshoe type. The screw propeller has four blades of manganese bronze, with a boss of cast steel. The diameter is 20 feet. Water is circulated through the condenser by two large centrifugal pumps driven by independent triple expansion engines of the single-acting, direct-acting type, with enclosed crank, etc., each pump being capable of supplying sufficient water when the main engines are working at full power. The



air pumps are worked by levers from the crosshead of the high and low engines. A feed-water heater, with the necessary feed pumps and connections, is fitted alongside the main engines. There are also two evaporators, with the necessary pumps, working in combination with two distillers for supplying fresh water to the ship, and also for the boilers. An auxiliary condenser, with a separate air and circulating pump, is also fitted and connected to all the auxiliary exhaust pipes in the ship, and a

and each of the three machines has an output of 135 amperes and 105 volts at 250 revolutions per minute.

The ships boilers are five in number—three double-ended, the length of which is 19 feet 2 inches, and diameter 15 feet 2 inches; and two single-ended, the length of which is 10 feet, and the diameter 16 feet. They are of the ordinary multitubular marine type, and arranged with one funnel. Each of the double-ended boilers has six furnaces, and each of the single



large double-acting duplex donkey pump is connected to a complete system of piping for emptying and filling the ballast tanks. Among other auxiliary apparatus is a large refrigerating machine of the ammonia type on the De la Verne principle and three large dynamos for supplying light, which are drawn by triple expansion engines of the direct-acting enclosed type. The lighting installation is for 596 incandescent lamps

ended boilers has four furnaces, making a total of twenty-six furnaces, all having Purves' flues. Two large fans are fitted in the funnel casing, to insure an abundant supply of air to the stokeholds. These fans are 6 feet in diameter, and are driven up to 200 revolutions per minute. The stokehold is open, and the fans are only for use in very warm weather, or when necessary for ventilation.



### No Trials of the Boilers.

Although the London trade journals, notably *Engineering*, have for weeks been filled with communications bearing upon the challenge of James Howden, inventor of Howden's hot draft, to the manufacturers of the Belleville water tube boiler in Great Britain, for an actual competitive trial of efficiency between Scotch boilers and those of the Belleville type, the whole matter is to pass over without a settlement of questions of difference, even as far as such a trial would tend to determine matters of general interest. The British manufacturers of the Belleville boiler, Maudsley Sons & Field of London, would not accept Mr. Howden's challenge, and gave no particular reason for declining the proposition, further than to say that they were themselves satisfied with the progress being made in introducing the boiler into naval and merchant ships, and had no desire to satisfy public curiosity by undertaking the proposed tests.

Mr. W. D. Hoxie of the Babcock and Wilcox Company, New York, informs the *REVIEW* that Messrs. Thos. Wilson Sons & Co., of Hull, England, ship-owners, who have had one of the Babcock and Wilcox marine type of boilers in use about a year and a half on the steamer *Nero*, have given an order for 1,300 horse power to be fitted into another of their ships. The boilers will be constructed entirely of open-hearth steel forgings, and will carry a working pressure of 225 pounds per square inch.

Belleville boilers, to be constructed by the British manufacturers, are to be placed in a fast steamer for the Russian volunteer fleet, which is being constructed by Messrs. R. & W. Hawthorne, Leslie & Co., Hebburn-on-Tyne. The guaranteed speed of the vessel is 19.5 knots on a twelve hours' trial. There will be twenty-four boilers and they will be arranged in three groups of eight each. They are to be constructed to carry steam of 250 pounds pressure, and with a grate area of 1,132 square feet and a heating surface of 35,000 square feet will give steam for 12,500 indicated horse power. The engines are to be of the triple-expansion type, with steam of 170 pounds working pressure. There will be two sets to work twin propellers. The vessel will be 500 feet by 54 feet by 24 feet, and will carry 4,000 tons dead-weight, in addition to 1,400 tons in the coal bunkers.

### Cleveland Harbor Improvements.

Representatives of the city government in Cleveland have for some time past been working with the navigation committee of the chamber of commerce, in an effort to secure appropriations from the city, as well as the general government, for widening and straightening the Cuyahoga river from a point beginning at the harbor entrance and extending as far up the river as may be possible with funds to be obtained from both sources. The plan is to direct attention to advantages to be derived from improving the present harbor afforded by the river, and to have the city undertake such improvements on quite an extended scale, while receiving some assistance from the general government in the way of approaches to the river.

"I suppose these committees are willing to accept suggestions," said Capt. Geo. P. McKay to a party of vessel owners, a few days ago, "and it has occurred to me that if the river is to be widened the work should begin in the channel known as the old river bed and the approach to that channel. Fully 80 per cent of the iron ore and coal business of Cleveland is confined to the old river bed. The Minnesota Steamship Company, which conducts a larger business in that channel than any other shipping concern in Cleveland, contemplates the construction of a steamer of 400 feet keel and 48 feet beam, the largest boat as yet thought of on the lakes. This steamer as well as all others of her kind will be forced to trade exclusively to Lake Erie ports other than Cleveland, if such obstructions as the Valley and Willow street bridges, with the bends in the immediate vicinity of them, are to remain undisturbed. There is no question of the old river bed being the proper place to begin with any improvement that is to be undertaken by the city, and the expense attending such alterations as are necessary would be only trifling as compared with the advantages to be obtained."

Capt. McKay's opinion in this matter certainly meets with endorsement from practical vessel men who understand what is most needed in Cleveland harbor improvements.

### A Remarkable Breakdown.

Editor *MARINE REVIEW*: The peculiar breakdown of the steamer *Peerless* noted in the last *REVIEW* has a parallel in the case of the steamer *S. J. Macy*. Some time in August last she suffered a breakdown and the attendant circumstances were remarkable enough to be worthy of notice.

Her engine is a steeple compound, and the throttle valve is attached to the side of the high pressure steam chest. The pistons are taper-fitted to the rod and secured by nuts. The high pressure rod let go just below the nut, and the piston thus released left the rod, smashing the cylinder cover, some of the fragments of which crashed through a partition into the kitchen. The piston, after smashing the skylight, descended and landed edgewise on top of the high pressure steam chest,

fracturing it, and rebounding from there struck the arm of the throttle valve and shut off the steam, though in doing so it smashed the throttle gear completely. Passing downwards and through a companionway leading to lower engine room it landed finally at the foot of the stairway, not two paces from the engineer, who had just descended.

Now note the possibilities. If the piston had missed the throttle, the engineer would probably not have been able to get near it, even supposing he had escaped as he did. If it had simply disabled the throttle rigging without shutting the valve, the consequences might have been still more serious. As it was, everything worked harmoniously and no one was scratched. Altogether it was one of the most remarkable breakdowns that ever came under the writer's notice.

X. N. TRICK.

Detroit, Mich., Nov. 21, 1894.

### Around the Lakes.

Harvey C. Beeson, publisher of "*Beeson's Inland Marine Directory*," is in Cleveland preparing for another issue of his book.

The Johnson company is considering the matter of trying to arrange its furnaces for the new steel plant at Lorain so as to use Mesabi ore almost entirely.

Up to Dec. 1, Milwaukee had received 711,302 tons of anthracite and 437,224 tons of bituminous coal, or a total of 1,148,526, which is an increase of 31,078 tons over 1893.

A. M. Jones, formerly with the firm of J. M. Jones & Co., Detroit, has severed his connection with that company and is now associated with C. R. Jones of Cleveland.

Damages to the steamer *V. H. Ketchum*, which was stranded near Whitefish point some time ago, have been fixed by survey at \$26,369.20, of which the owners will be required to stand 43 per cent.

J. H. Bowles of 94 Reade street, New York, who has prepared from photographs a large engraving containing likenesses of 154 lake captains, is in Cleveland delivering the pictures. The work has been very well done.

The annual meeting of the grand lodge, Shipmaster's Association, will open at the Russell House, Detroit, on Tuesday, June 8, the date which has also been decided upon for the opening of the annual meeting of the Lake Carriers' Association.

For a new port, Conneaut has made a good record in the coal and ore business during the past season. An official report from Capt. Day, superintendent of the docks, notes receipts of 237,905 gross tons of ore and shipments of 89,023 net tons of coal.

W. C. Farwell of Chicago has sold the schooner *Sunrise* to Capt. Frank Conlin of Buffalo for \$6,900, the schooner *A. J. Rogers* being taken in part pay. George D. Kitzinger of Manistee has sold a quarter interest in the steamer *Mark B. Covell* to Arthur Kitzinger of the same port for \$3,684.

Capt. J. J. Reed, U. S. N., who was recently in charge of the light-house district having headquarters at Detroit, is about to take command of the protected cruiser *Olympia*. The *Olympia*, which was built by the Union Iron Works of San Francisco, will shortly take her place in the Pacific squadron.

Capt. E. M. Peck of Detroit was not considered a candidate for the position of president of the Lake Carriers Association mainly for the reason that he is making preparations to so arrange his business as to be at liberty to take two or three years of rest and to spend a large portion of this time abroad if he is so disposed.

Mesabi mining companies that are operating under state leases will make a strong effort in the legislature, to convene shortly, for a reduction of royalties, but as there is considerable opposition to the movement throughout the state, and as the mines of the companies like the Rockefeller syndicate and the Minnesota are mostly owned in fee, there is doubt of the request being granted.

It is evident from complaints made by masters and owners whose boats have been taking coal out of Buffalo of late, and who have been forced to pay exorbitant prices for fuel in order to secure cargoes, that the question of devising some plan of overcoming this abuse at Buffalo, as well as other Lake Erie ports, will again be brought up at the annual meeting of the Lake Carriers' Association in Detroit on Jan. 8.

General Manager Gordon of the Northern Steamship Company announces that Mr. Duncan Fraser has been appointed to the position of superintending engineer in the company, vice A. MacAdam, resigned. It is understood that Mr. Peck's services with the company, which were expected to be only temporary, are at an end. From experience gained as chief engineer on the *North West*, Mr. Fraser is considered fully competent to look after the company's interests in the construction of machinery and boilers for the *North Land* and the operation of the two big boats next season.



## Iron Ore Record, Season of 1894.

LAKE SHIPMENTS AGGREGATE 7,776,547 GROSS TONS—RECEIPTS AT LAKE ERIE PORTS FOOT UP 6,350,825 TONS—4,834,247 TONS ON LAKE ERIE DOCKS.

Complete returns from all upper lake shipping ports, as well as all receiving docks at Lake Erie ports, make it possible to present full statistics in this issue. The most important features of the returns are contained in the following small table, gross tons ruling in all cases:

	1894.	1893.
Total output by water from shipping ports	7,776,547	5,880,918
Total receipts at Lake Erie docks.....	6,350,825	5,333,061
Total amount on dock Dec. 1 .....	4,834,247	4,070,710

It will be noted that the movement of ore during the past season by lake is more than 1,700,000 tons greater than the lake and rail movement in 1893, and the amount on dock is a little more than 750,000 tons greater than a year ago. This latter figure is somewhat surprising, but it is certain that the proportion of unsold ore is very light as compared with the past two years and the consumption now more active than it has ever been in the history of the iron ore business. Then, too, a very large portion of the ore on dock is Mesabi ore, the shipments from that range having reached a total of 1,793,988 tons, of which 1,369,252 tons was moved through Duluth and 424,736 tons through Two Harbors. The tables that follow give the statistics in detail:

## WATER SHIPMENTS OF IRON ORE FROM ALL LAKE SUPERIOR PORTS—GROSS TONS.

	1894.	1893.	1892.
Escanaba .....	1,643,000	2,048,981	4,010,085
Marquette .....	1,433,872	1,086,934	1,026,338
Ashland .....	1,738,590	1,117,524	2,223,683
Two Harbors .....	1,373,253	903,329	1,165,076
Gladstone .....	218,580	203,585	115,886
Superior .....		80,273	4,245
Duluth .....	1,369,252	440,292	
Total by lake .....	7,776,547	5,880,918	8,545,313
Total all rail .....		178,037	528,930
Grand total .....		6,058,955	9,074,243

## IRON ORE RECEIPTS AT LAKE ERIE PORTS DURING FIVE YEARS PAST—GROSS TONS.

PORTS.	1894.	1893.	1892.	1891.	1890.
Toledo .....	158,384	145,515	139,987	191,105	164,295
Sandusky .....	23,043	4,464	49,736	105,907	174,596
Huron .....	172,775	137,700	65,000	14,910	1,200
Lorain .....	150,424	165,667	190,400	266,009	280,450
Cleveland .....	1,624,573	1,260,716	1,950,224	1,257,775	1,945,492
Fairport .....	976,222	792,517	866,611	699,434	1,096,408
Ashtabula .....	1,987,722	1,845,738	2,555,416	1,599,785	2,176,730
Conneaut .....	237,905	203,207	1,130		
Erie .....	624,438	469,297	645,230	393,759	487,493
*Buffalo .....	395,339	308,238	197,000	410,000	548,000
Total .....	6,350,825	5,333,061	6,660,734	4,939,684	7,874,664

\*Includes 90,339 tons shipped to Tonawanda.

## IRON ORE ON DOCKS, LAKE ERIE PORTS, ON DEC. 1 OF EACH YEAR FOR FIVE YEARS PAST—GROSS TONS.

PORTS.	1894.	1893.	1892.	1891.	1890.
Toledo .....	96,157	92,911	71,409	122,515	110,740
Sandusky .....	77,004	78,439	87,500	122,000	115,000
Huron .....	147,632	89,000	45,000	14,910	1,200
Lorain .....	223,733	201,633	147,600	250,812	210,237
†Cleveland .....	1,441,785	1,163,930	1,347,992	1,114,762	1,209,467
Fairport .....	660,980	578,033	610,609	597,617	721,000
Ashtabula .....	1,439,119	1,296,431	1,312,658	903,957	1,151,397
Conneaut .....	199,365	91,337			
Erie .....	454,233	359,827	401,683	252,916	248,714
Buffalo .....	94,239	119,170	125,000	129,000	125,732
Total .....	4,834,247	4,070,710	4,149,451	3,508,489	2,893,487

†Includes amount at furnaces of Cleveland Rolling Mill Company.

"SAILING DIRECTIONS FOR LAKE SUPERIOR, ST. MARY'S RIVER AND STRAITS OF MACKINAC" IS A PUBLICATION JUST ISSUED BY THE UNITED STATES HYDROGRAPHIC OFFICE. IT IS FAR IN ADVANCE OF PUBLICATIONS OF THE COAST PILOT KIND. PRICE \$1. ADDRESS MARINE REVIEW, 516 PERRY-PAYNE BUILDING, CLEVELAND, O. WE HAVE NO HESITANCY IN RECOMMENDING THIS BOOK.

## Coal Shipments to Lake Superior—Sault Canal Report.

St. Mary's Falls canal traffic for the full season of 1894 will exceed by more than 2,000,000 tons the business of 1893, and the year's record will be the greatest in the history of the canal. Figures showing the tonnage movement to Dec. 1, are at hand. As the iron ore traffic is covered in full elsewhere in this issue, the most interesting feature of the canal statistics relates to coal. The reports show that the total movement of coal to all Lake Superior ports up to Dec. 1 of the year is 2,790,774 net tons against 3,008,120 tons on the same date a year ago, or a shortage of only 217,346 tons, notwithstanding the delays in forwarding coal early in the season. Of the coal shipped to Lake Superior to Dec. 1 of this year, 526,460 tons was anthracite and 2,264,314 tons was bituminous. Shipments of coal by months are fully shown in the following table:

## COAL SHIPMENTS THROUGH ST. MARY'S FALLS CANAL BY MONTHS, TO DEC. 1, SEASONS OF 1894 AND 1893.—NET TONS.

Months.	1894.	1893.
	Bituminous.	Anthracite.
April .....	31,052	27,398
May .....	16,372	52,123
June .....	12,300	108,220
July .....	227,061	58,141
August .....	648,042	42,431
September .....	552,930	73,755
October .....	551,289	66,938
November .....	225,268	97,454
Total .....	2,264,314	526,460

Statements of the total movement of tonnage east and west bound to Dec. 1, 1894, and Dec. 1, 1893, as well as a detailed account of the different kinds of freight making up the canal business for the same period, will be found in the following tables:

## COMPARISON OF FREIGHT TONNAGE TO DEC. 1, 1893 AND 1894.

	To Dec. 1, 1893.	To Dec. 1, 1894.
East bound freight, net tons .....	7,345,941	9,607,738
West bound freight, net tons .....	3,392,190	3,032,134
Total freight, net tons .....	10,738,131	12,639,872
Increase, net tons .....		1,901,741

## FREIGHT MOVEMENT TO AND FROM LAKE SUPERIOR UP TO DEC. 1, 1894, COMPARED WITH MOVEMENT TO THE SAME DATE IN 1893.

## EAST BOUND, NET TONS.

ITEMS.	Designation.	To Dec. 1, season of 1893.	To Dec. 1, season of 1894.
Copper .....	Net tons .....	87,530	98,893
Corn .....	Bushels .....	2,386,499	1,529,948
Building stone .....	Net tons .....	19,426	21,417
Flour .....	Barrels .....	7,291,281	8,738,123
Iron ore .....	Net tons .....	4,010,990	6,544,648
Iron, pig .....	Net tons .....	32,766	21,068
Lumber .....	M. ft. B. M. ....	578,499	718,938
Silver ore .....	Net tons .....	2,470	412
Wheat .....	Bushels .....	42,290,267	34,495,882
Unclassified freight .....	Net tons .....	147,722	181,690
Passengers .....	Number .....	9,244	13,869

## WEST BOUND, NET TONS.

Coal, anthracite .....	Net tons .....	} 3,008,120*	526,460
Coal, bituminous .....	Net tons .....		2,264,314
Flour .....	Barrels .....	3,860	783
Grain .....	Bushels .....	28,850	10,500
Manufactured iron .....	Net tons .....	56,846	36,107
Salt .....	Barrels .....	225,130	237,561
Unclassified freight .....	Net tons .....	262,808	268,903
Passengers .....	Number .....	9,615	13,331

\*Anthracite and bituminous were not separated in 1893.

Material for the Bellville boilers of the Northern line passenger steamer, North Land has begun to arrive in Cleveland and work is progressing rapidly on the boat. Aside from the few changes in providing more large staterooms, the only material difference between the North Land and her predecessor, the North West, will be in quarters aft on the main deck of the new boat for second-class passengers. The forward portion of the ship, which was fitted out for immigrants in the North West, will be occupied by a part of the crew in the North Land, and the space thus left vacant aft, by removal of part of the crew's quarters, will be arranged for second-class passengers, who will also have privileges of a part of the upper deck aft. The launch will occur about June 5, or on about the same date on which the North West was launched a year ago.

PHOTOGRAPHS of sixteen lake steamers and two color plates will be mailed to any address for 50 cents. MARINE REVIEW, Cleveland, O.





DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O.

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,341 vessels, of 1,227,400.72 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons and over that amount on the lakes on June 30, 1894, was 359 and their aggregate gross tonnage 634,467.84; the number of vessels of this class owned in all other parts of the country on the same date was 316 and their tonnage 642,642.50, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1894, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels.....	1,731	843,239.65
Sailing vessels.....	1,139	302,985.31
Canal boats.....	386	41,961.25
Barges.....	85	39,214.51
Total.....	3,341	1,227,400.72

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30,	Number.	Net Tonnage.
1890.....	218	108,515.00
" " " 1891.....	204	111,856.45
" " " 1892.....	169	45,168.98
" " " 1893.....	175	99,271.24
" " " 1894.....	106	41,984.61
Total.....	872	406,976.28

#### ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1893.	1892.	1891.	1893.	1892.	1891.
No. vessel passages	12,008	12,580	10,191	3,341	3,559	4,207
Ton'ge, net regist'd	9,849,754	10,647,203	8,400,685	7,659,068	7,712,028	8,698,777
Days of Navigation	219	223	225	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

OHIO'S labor commissioner, W. T. Lewis, has seen fit to give out to the newspapers, in advance of its approval by Governor McKinley, columns of extracts from an annual report in which it is intimated that the Lake Carriers' Association is an organization of hidden methods, working secretly for selfish aims and opposed to statistical inquiry of any kind that would tend to common prosperity. There is little doubt of Mr. Lewis being taught a lesson in discretion, when the attention of the governor of Ohio is directed, as it will be, by some of the foremost business men of the state, who are interested in lake commerce, to the absurdity of his statements regarding the Lake Carriers. To begin with, the Lake Carriers Association is not a body that is compelled to make reports of its affairs to state officers, any more than the grocer or small merchant of any town in the state, but everybody knows that its meetings and the conduct of its affairs by executive officers have been as open and public as the proceedings of the municipal councils throughout the state of Ohio. The trouble with Mr. Lewis and his assistants, who tried to prepare a summary of lake commerce, was a lack of knowledge pertaining to details of the business, and as already explained in these columns, they were fearfully struck with the idea that something was being hidden from them, when they found the officers of the Lake Carriers Association, and others who are acquainted with the business, unwilling to give up days of labor in doing work for them that should have been planned and executed by someone who was acquainted with the business. As it is, the commissioner has incorporated in his report a great deal of valuable data from such sources as the eleventh census, reports of the United States commissioner of navigation and the regular collections of statistics made by the trade papers devoted to shipping interests. If he had not added to this several paragraphs of uncalled for abuse of the Lake Carriers Association, his report would at least have been looked upon as a contribution from Ohio to the great mass of statistical information that has been presented on the subject of lake commerce.

WHATEVER lake underwriters may say to the contrary, it must be evident to everybody in the vessel business that they are now closing a season's business with very large profits on both hull and cargo risks. Not for years past has there been a season so free from heavy losses through stress of weather, and the number of repair bills paid on account of steel vessels stranding in the rivers is not near as great as the insur-

ance men would have it appear. They were very fortunate also with grain cargo risks taken during the closing days of the season. All this should suggest a reduced tariff next season, as the only excuse upon which the underwriters have maintained premium rates while all other branches of the vessel business are being conducted on reduced margins, was the loss of a couple of steel vessels that was really an advantage to them, as it allowed them to cut down values on all hulls and exclude entirely the poorer kinds of risks.

SEVERAL OF the leading representatives of commercial bodies of the United States and Canada, that made up the International Deep Waterways Association formed at Toronto a few months ago, have met in Chicago within the past week and have decided to try to secure the appointment of commissions from both countries, with appropriations of about \$50,000 each, to consider and report upon the subject of a deep waterway from the lakes to the Atlantic seaboard. Alike to all other meetings of this kind, the Chicago gathering was attended by a great deal of enthusiasm, and the decision to meet again at an early date, probably in Cleveland in September next, is evidence of a determined effort on the part of the advocates of this great scheme to at least carry on a general educational campaign on the subject among commercial bodies that are at all likely to be interested.

IN THE very first paragraph of his annual report, Mr. E. T. Chamberlain, United States commissioner of navigation, again urges the admission to American registry of vessels built abroad, if such vessels are owned and operated by American citizens. President Cleveland makes a direct and urgent plea along the same line in his message to congress, and it is, of course, well known that the president's address at the launching of the American line steamer St. Louis in Philadelphia contained reference to his position on this subject. If there is to be an organized effort among American ship builders and ship owners against this movement it will be well to begin early, as it would seem quite certain that a bill embodying the ideas of the president and the commissioner of navigation will be considered in the present congress.

DURING 222 days of navigation at Two Harbors, Minn., this year, 598 cargoes of iron ore were shipped and they averaged 2,296 gross or 2,570 net tons. This record is an indication of the class of vessels—certainly more than 85 per cent steamers—engaged in carrying ore from the head of Lake Superior to Ohio ports and Chicago. The largest cargo taken out of Two Harbors during the season was 3,221 gross or 3,607 net tons, by the Wilson line steamer Yuma, Aug. 24. Of course cargoes from Two Harbors are limited by a draft of but about 14 feet at the St. Mary's Falls canal. The minimum time of loading at the Minnesota port was 55 minutes, this despatch being given to the steamer Yuma on a cargo of more than 3,000 tons.

NO VESSEL owner could object to reasonable government supervision over matters pertaining to the safe navigation of sailing vessels. It is a standing disgrace to this country that practically no part of the rules for the protection of life on steam vessels apply to sailing vessels. Though delay may be encountered in reorganizing the branches of the treasury department devoted to shipping, it would seem that the present congress has an opportunity of winning general commendation by adopting a separate measure pertaining to the manning and equipment of craft not propelled by steam.

PRESIDENT CLEVELAND'S message endorses in a very urgent manner the recommendation of the secretary of the navy that congress provide appropriations at its present session for three battle ships and twelve torpedo boats, but of course there is a probability of the request not being heeded on account of the condition of the finances of the country.

SECRETARY CARLISLE favors a reorganization of the customs districts. He says there are now many ports of entry where little business is done, and devotes a paragraph in his extended report, dealing mainly with the money question, to suggesting a consolidation of such districts.

#### Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on Dec. 1, 1894:

	Wheat, bu.	Corn, bu.
Chicago.....	25,748,000	1,404,000
Duluth.....	5,141,000	.....
Milwaukee.....	761,000	.....
Detroit.....	1,344,000	31,000
Toledo.....	3,268,000	578,000
Buffalo.....	4,847,000	342,000
Total.....	41,109,000	2,355,000

At the points named there is a net increase for the week of 1,515,000 bushels of wheat and 649,000 bushels of corn.

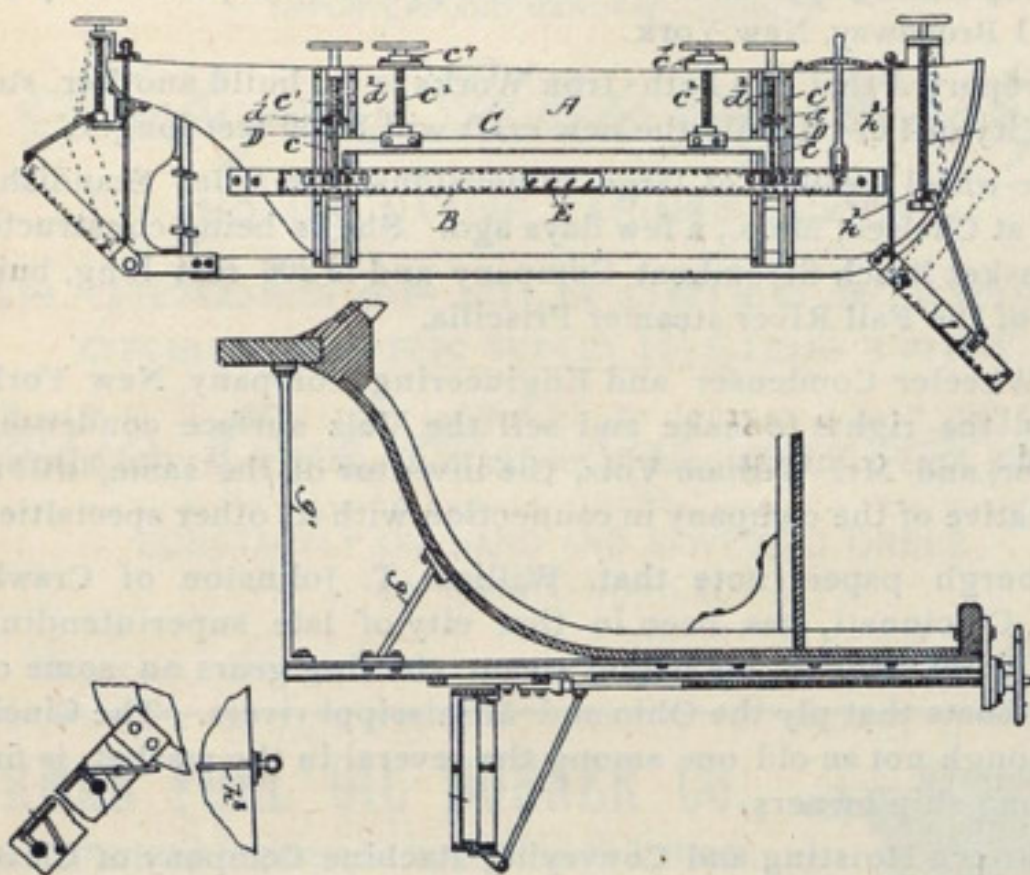


## Illustrated Patent Record.

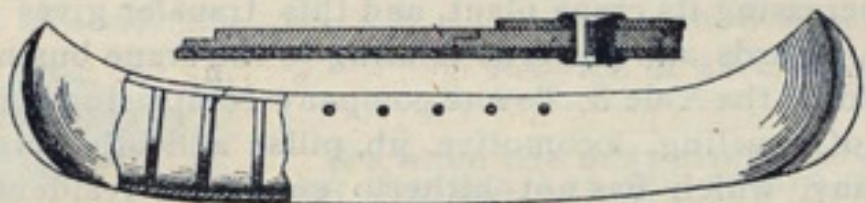
529,882. Wave Power Propeller for Boats. Sidney S. Smith, Boston, Mass. Filed Dec. 11, 1893. Serial No. 493,386.

Claim. In a device for propelling boats by wave power, slideways secured to the vessel's sides, slides or a sliding frame guided by said slideways and vertically movable by screws operated from the vessel's deck frames carrying propelling blades hinged upon their inner sides to said vertically movable slides and combined bracing, adjusting and frame elevating devices comprising stay rods and screw shafts to engage nuts carried by the stay rods, which shafts are operated from the vessel's deck, substantially as described.

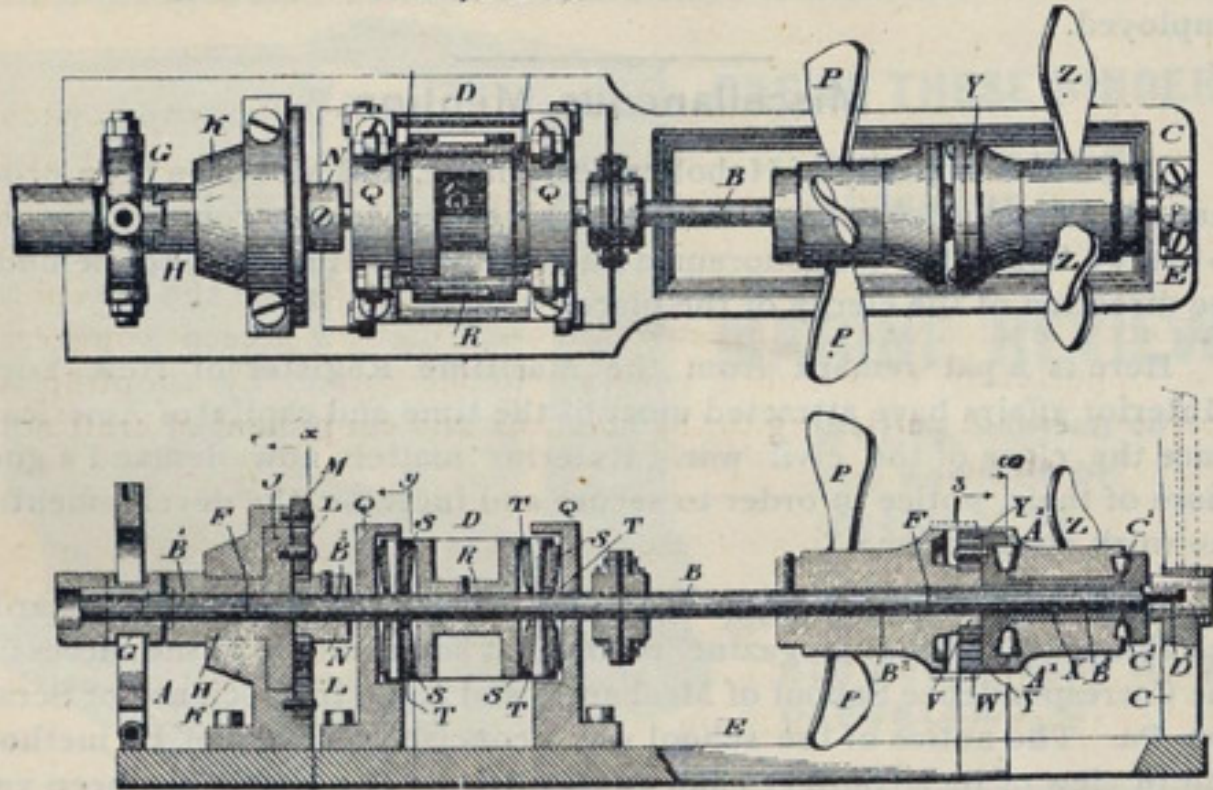
529,882. WAVE-POWER PROPELLER FOR BOATS



529,786. BOAT.



529,916. PROPELLER



529,786. Boat. George L. Godfrey, Old Town, Me. Filed June 22, 1894. Serial No. 515,354.

A boat comprising a frame incased by planking having its edges halved together, the projecting edge portions of a plank being disposed on opposite sides, whereby a break joint is produced, canvas incasing the planking and folded over the edge of the boat, holes provided along the edge of the boat, and metal plates reinforcing the said holes and having their outer portions clamped against the canvas to secure the same and the planking together.

529,916. Propeller. Joseph B. Jones, Philadelphia, Pa. Filed Apr. 17, 1894. Serial No. 507,852.

Claim. A sectional shaft, a rotatable sleeve connected with one section, and a propeller secured to another section thereof, pinions journaled on one side of said sleeve, a housing in which said sleeve is journaled, an internal gear rim connected with said housing, and a pinion on said propeller section, meshing with said sleeve pinions, said propeller section of the shaft being journaled in said sleeve and said parts being combined.

## In General.

Wm. T. Malster, president of the Columbian Iron Works, Baltimore, Md., has headed a syndicate to construct a yacht to defend the America's cup.

United States consular reports for November contain a great deal of information regarding wages paid in the ship yards of Great Britain, France, Germany and other European countries.

There are twenty-seven naval constructors and assistant naval constructors in the United States navy. The fourteen full constructors range in rank from lieutenant to captain. The thirteen assistants rank as junior lieutenants.

The December Review of Reviews is an unusually strong "book number." Its seventeen page resume of the American and English literature of the month is creditable to the literary sense and enterprise of the management.

A leading article in Cassier's Magazine for December is "The New American Navy," written by Mr. Lewis Nixon, superintending naval constructor at Cramps. Types of new cruisers, battleships and torpedo boats are illustrated, and by way of comparison illustrations are given also of some of the crack English ships.

Walter N. DeGrauw, Jr., of the firm of DeGrauw, Aymar & Co., leading New York ship chandlers, whose death was announced a few days ago, was one of the oldest of New York merchants in the shipping line. The firm of which he was a member is well known to vessel owners in all parts of the country.

It is again reported that President James J. Hill of the Great Northern Railway and Northern Steamship Company contemplates the construction of a steamship similar to the North West, to ply between San Francisco and Portland, Ore., as an adjunct to his railway, which is now in full operation, through to the Pacific.

British and French naval authorities have been considering a modification of the international code of signals, and it is stated that an understanding has been reached. One of the French officers, by a simple combination of the existing letters and flags, has contrived to add 5,000 new words to the existing code; otherwise no change is proposed.

Abram S. Schropp, secretary of the Bethlehem Iron Company, South Bethlehem, Pa., informs the REVIEW that there is no truth in the report of his company having received a contract for armor from the Russian government. The Cramps and the Bethlehem company were understood to have been figuring with Russia for the construction of two or three armored cruisers, and it was rumored a few days ago that a contract had been closed.

It was expected that upon his return to Washington Secretary Herbert of the navy would award to the John P. Holland Torpedo Boat Company the contract for construction of a submarine torpedo boat on that company's bid of \$150,000, but as yet no announcement to that effect has been made. The torpedo boat company will be expected to demonstrate the practical efficiency of the vessel when she is completed before she will be accepted by the department.

The Sailors' Snug Harbor, a most excellent institution with a world-wide reputation, is making a collection of pictures of a nautical character, and contributions are requested with the promise that the name of the donor will be attached to the contribution. Capt. Albert Spencer, No. 19 Whitehall street, New York, is in charge of the work. Some reader of the REVIEW may have a picture of a ship or a portrait or two of men closely identified with shipping that would add to the comfort and pleasure of inmates of this famous home.

Capt. Howard Patterson, who is well known as the author of several valuable works on navigation, has re-opened his nautical college at No. 130 Water street, New York city. It is re-established on a pretentious scale, with class rooms, lecture hall, etc., and is intended as a preparatory school to the United States Naval Academy and revenue marine, as well as a school for naval reserve members and yachtsmen who may desire assistance in either steam or sail navigation. Officers of the merchant service seeking either a master's, mate's or pilot's steam license will find instruction in the school of value in fitting them for examination.

Rear Admiral Meade seems to be somewhat out of favor with his superiors in the navy department just at present, and there are some people who believe that his radical criticism of cruisers in the navy, especially the Columbia and Minneapolis, at the recent meeting of naval architects and marine engineers in New York has had something to do with it. Acting-Secretary McAdoo administered a rebuke to him a few days ago in connection with the appointment of a court of inquiry to investigate the accident to the Cincinnati, and now it is said that Admiral Walker is to be given command of the North Atlantic squadron. The cruiser Minneapolis, it is thought, will be fitted out to succeed the New York as flag ship of the North Atlantic squadron, and it is probable also that when the Columbia returns from West Indian waters she will be similarly fitted out and assigned to the European station as Rear Admiral Kirkland's flag ship.



### Value of a Wreck-Indicating Buoy.

Shortly after leaving Brooklyn navy yard, a few days ago, the cruiser Cincinnati struck a sunken obstruction of some kind and punched a hole in her side just below the water-line. She was compelled to return to the navy yard for docking and repairs. Other vessels will probably come in contact with this same obstruction, but if the Cincinnati carried on deck a buoy of some kind that could readily have been thrown overboard, it would have been located and probably removed with very light expense. Reference has several times been made in the REVIEW to Ward's wreck-indicating buoy, a patented device owned by Mr. Thomas S. Christie and other stockholders in the Frontier Iron Works, Detroit, and which would have served the purpose desired in connection with the accident to the Cincinnati. The Ward device is a simple and inexpensive combination of a reel and buoy, and it is of essential merit from the fact that it is automatic and is always in place aboard a vessel for instant and positive action in case of accident. It was primarily intended, of course, to mark the location of a vessel after sinking, but its usefulness in accidents like that which occurred to the Cincinnati is equally important. The buoy has been officially examined by Capt. W. S. Schley, U.S.N., at Tompkinsville, N.Y., and by Commander Oscar F. Heyerman, U.S.N., at Detroit, Mich., under directions from the light-house board, and both of these officers have made very favorable reports regarding its adaptability to the purposes for which it is intended.

### Coal Shipments and Grain Receipts at Buffalo.

Shipments of anthracite coal from Buffalo for the full season will not equal the amount moved from that port in 1893. On Dec. 1, the decrease was about 230 000 net tons, as shown from the following table of custom house figures, which are not altogether correct but are near enough to official statistics to be valuable in making comparisons:

	1894.	1893.	1892.
	Net tons.	Net tons.	Net tons.
April.....	102,997	178,040	112,439
May.....	240,747	363,435	293,463
June.....	384,663	391,580	374,069
July.....	318,672	254,070	412,814
August.....	254,988	252,945	247,562
September.....	269,910	390,168	377,562
October.....	339,378	359,465	546,523
November.....	433,050	436,330	469,248
Total.....	2,394,405	2,626,033	2,813,680

Grain receipts for the month of November were comparatively light—13,320,264 bushels, against 15,475,443 last year. Flour receipts, on the other hand, showed an increase of nearly 100,000 barrels, compared with November, 1893. The total receipts of grain (flour included as grain) for the season to Dec. 1 was 150,329,549 bushels, against 186,088,688 bushels last year—a decrease of 35,759,139 bushels. This season's grain receipts have been the smallest in four years. Lumber still shows a falling off. The season's receipts to Dec. 1 were 215,117,590 feet, against 263,159,530 in 1893, and 291,435,880 in 1892. There is, however, a large increase in shingle receipts—103,667,450, against 50,499,690 last season.

### Notice to Mariners.

George W. Bacon reports finding a rock with scant 11 feet of water on it about thirteen miles west from Huron pier, Lake Erie. It is from 10 to 12 feet square, and has forty feet of water around it.

Iron buoys in Green bay and Lake Michigan will be taken up between Dec. 1 and 10, and spar buoys painted in the same manner as the iron buoys substituted therefor. Light-vessels in the Lake Michigan district will be left in position until Dec. 10, if the weather will permit.

The structure from which is shown the rear light of Winter point range, on the southerly end of Neebish island, St. Mary's river, has been moved to a point on the westerly prolongation of the range line, 675 feet in the rear of the front light, and the light is exhibited therefrom as heretofore.

Mark W. Harrington, chief of the weather bureau, announces that the display of wind signals will be continued on Lakes St. Clair, Erie and Ontario till Dec. 15, and on Lakes Michigan and Huron to Dec. 10, but on Lake Superior they will be discontinued with the closing of the St. Mary's Falls canal, and no time is fixed for discontinuing these signals at Chicago, Milwaukee, Grand Haven, Ludington or Manistee, where there is considerable fall and winter traffic.

From the office of the Canadian minister of marine it is announced that lights have been put in operation to mark the entrance to Parry Sound, Georgian bay. The first is a fixed red light, the front light of a pair to be known as the Snug Harbor range and elevated 39 feet. The second light is a fixed white light, elevated 62 feet. The third is on the summit of the northernmost Gordon rock, and is the front light of the Jones island range. This is a fixed red light, elevated 40 feet. The fourth is the rear

light, and is a fixed white, elevated 63 feet above the level of the bay. The fifth is located at the summit of Hugh rock, at the junction of Albert channel with the main channel, and is a fixed white, elevated 34 feet above the water level. It is also announced that the temporary pole light maintained Kagawong, at the port of Mudge bay, north channel, on the north shore of Manitoulin island, has been replaced by a light shown from an enclosed tower, built on the same location as the original mast, 75 feet back from the shore line, and 100 feet westward from the public wharf. The light is a fixed white, elevated 38 feet.

### Trade Notes.

Arthur Sewall, Bath, Me., will build another four-masted ship of steel.

An evaporating apparatus for steamships has been patented by Horace See, No. 1 Broadway, New York.

It is reported that the Bath Iron Works is to build another steamer like the City of Lowell, only the new craft will be 50 feet longer.

A side-wheel steamer of large dimensions, the Miles Standish, was launched at Chelsea, Mass., a few days ago. She is being constructed for the Nantasket Beach Steamboat Company and is 206 feet long, built on the lines of the Fall River steamer Priscilla.

The Wheeler Condenser and Engineering Company, New York, has purchased the rights to make and sell the Volz surface condenser and feed heater, and Mr. William Volz, the inventor of the same, will act as representative of the company in connection with its other specialties.

Pittsburgh papers note that William T. Johnston of Crawley & Johnston, Cincinnati, has been in that city of late superintending the construction of some of his patent steam steering gears on some of the large tow-boats that ply the Ohio and Mississippi rivers. The Cincinnati gear, although not an old one among the several in the market, is finding favor among ship owners.

The Brown Hoisting and Conveying Machine Company of Cleveland, which is now undoubtedly the largest concern of its kind in this country, has purchased the business of the crane department of the Yale & Towne Manufacturing Company of Stamford, Ct. The Brown company, having a very large business in conveying machinery, has for some time been desirous of increasing its crane plant, and this transfer gives them all of the drawings, records and patterns relating to the crane business heretofore conducted by the Yale & Towne company comprising the designing and building of traveling, locomotive, jib, pillar and other cranes. The Brown company, which has not hitherto employed resident agents in other cities, will, it is said, take up this method of extending their business and in many cases the agents of the Yale & Towne company will continue to act for the new concern, while the other new agents will be employed.

### Miscellaneous Mention.

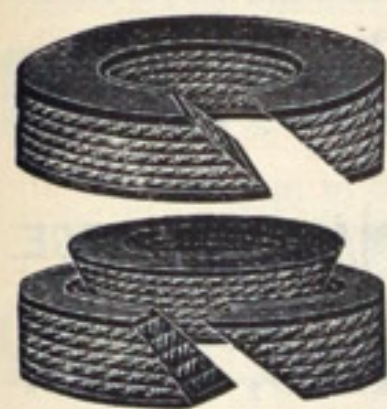
The Stevens family of Hoboken ferry fame, and who have been prominent in the advancement of marine engineering in this country, propose to erect a home for 'longshoremen and sailors in Hoboken, to be under the direction of the clergy of the place.

Here is a pat remark from the Maritime Register of New York: "Interior affairs have attracted most of the time and capital of Americans since the close of the civil war. Exterior matters now demand a good share of their notice in order to secure and increase the development of the work already done."

In a recent issue of Industry of San Francisco, Mr. John Richards, the able editor of that magazine, referred at some length to the success of the Correspondence School of Mechanics and Industrial Science of Scranton, Pa. The notice of the school was a concise summary of its methods and in view of its advantages and possibilities. The article has been very extensively copied, and it would seem, from what can be learned of young men in lake ship and engine building establishments who have taken instruction from the Scranton school, that it is deserving of support of this kind from all journals devoted to industrial pursuits.

Objections to the efforts of the Women's Christian Temperance Union to induce Mrs. Cleveland to depart from the custom of breaking a bottle of wine over the bow of the American Line steamer St. Louis might be expected from some of the daily newspapers, but it was hardly looked for among the more dignified editors of the technical press. The good women in the temperance cause will find a nut to crack, be it hard or soft, in the point raised by a writer on one of the trade journals of London, who says: "Now I could have understood a protest of that kind being lodged by an association of Bacchanals, who would doubtless prefer to see clear water used for the christening, so that the wine might not be diverted from the purpose for which its manufacturers, no doubt, originally intended it. But the Women's Temperance Union were illogical in adopting such a course, for wine spilt over a vessel's bows certainly could not tend to produce drunkenness."





# GARLOCK PACKINGS.

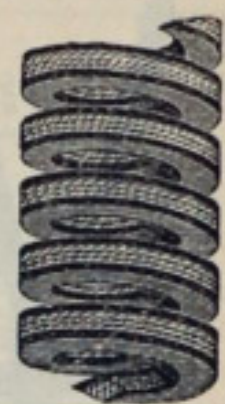
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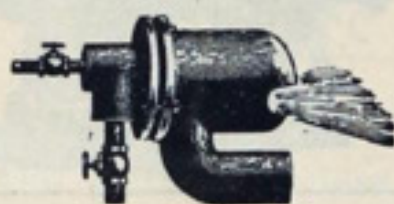
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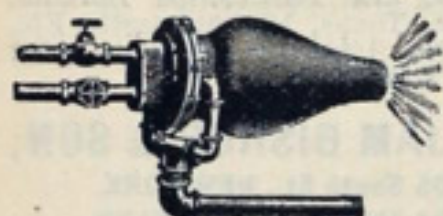
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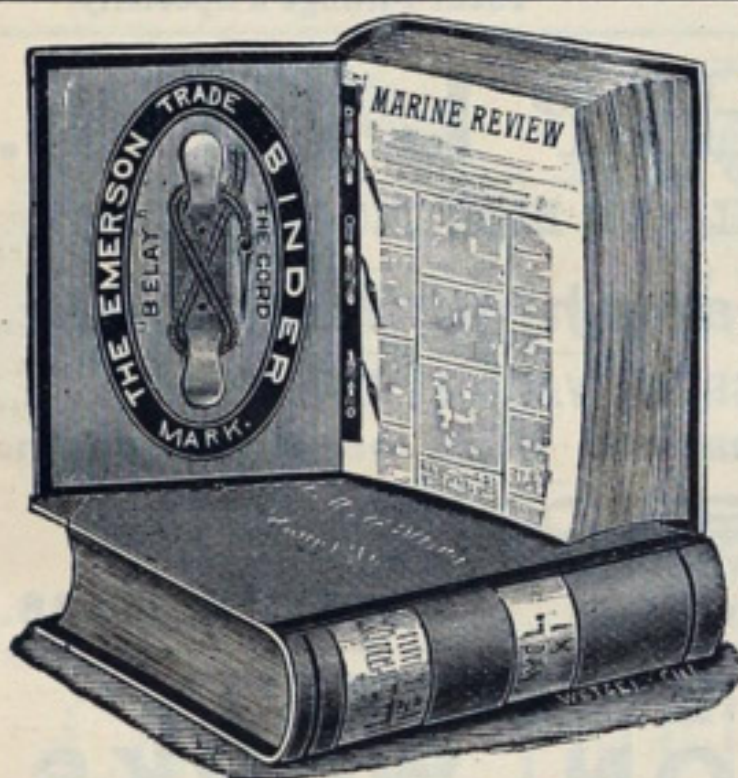


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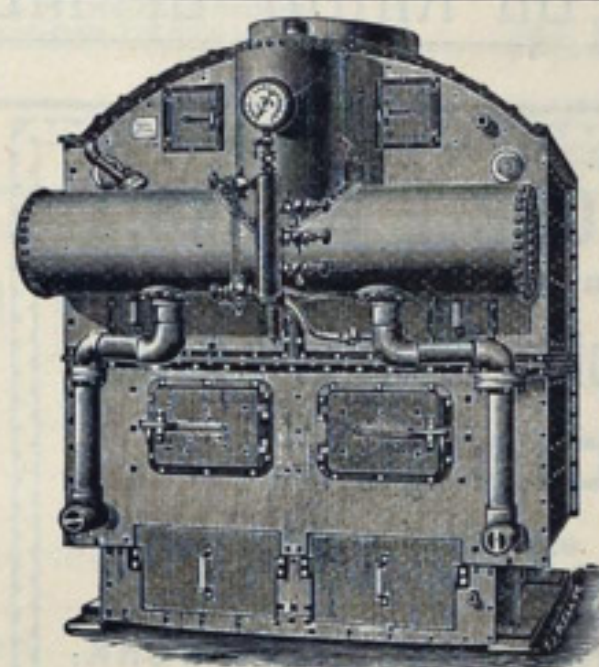
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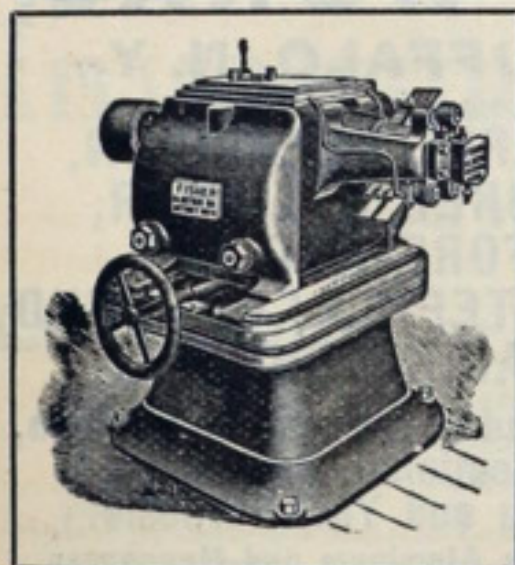
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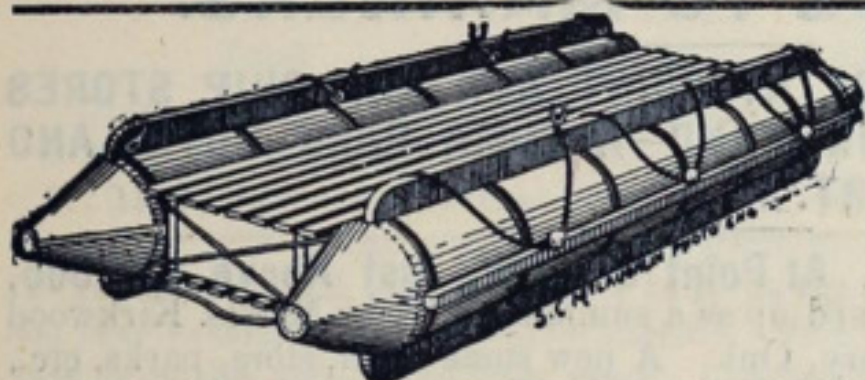
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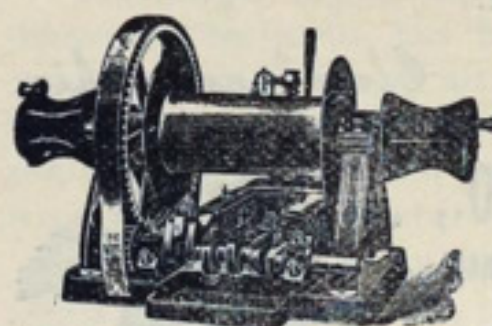
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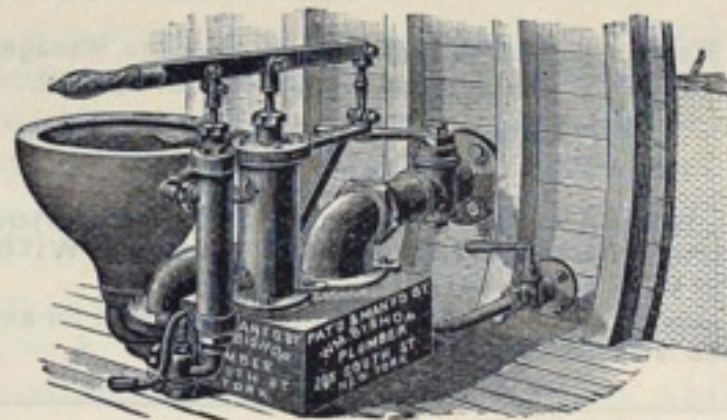
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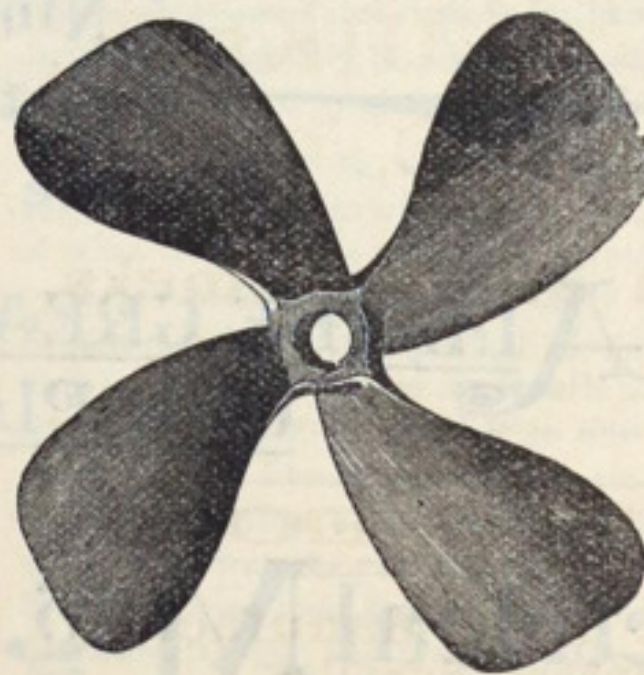
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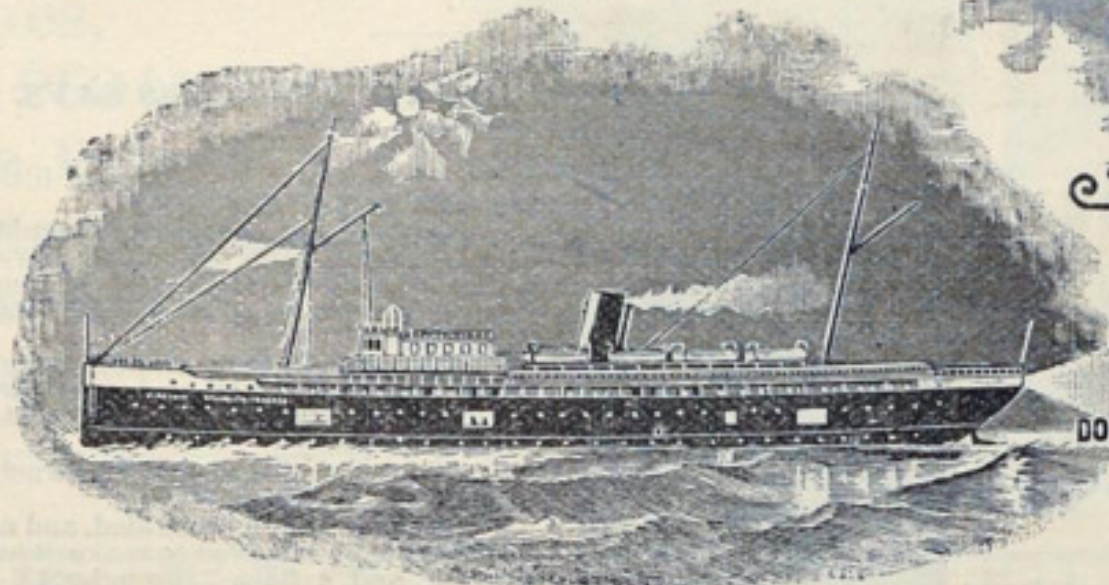
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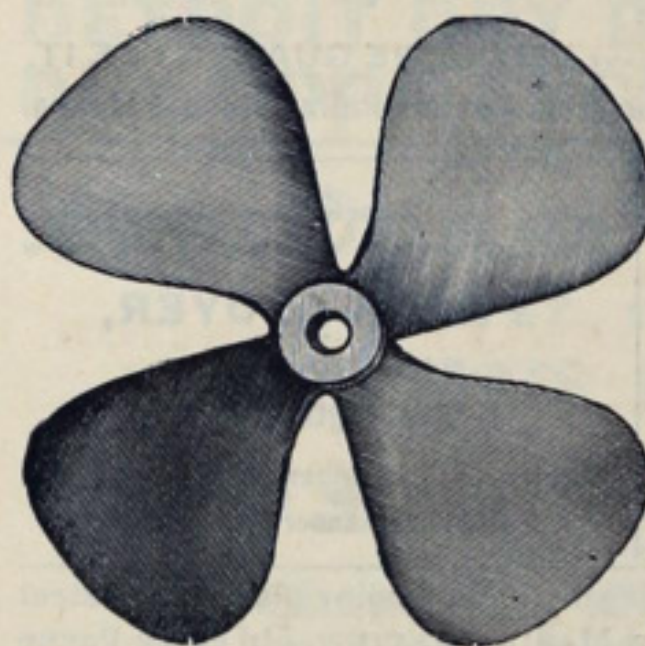
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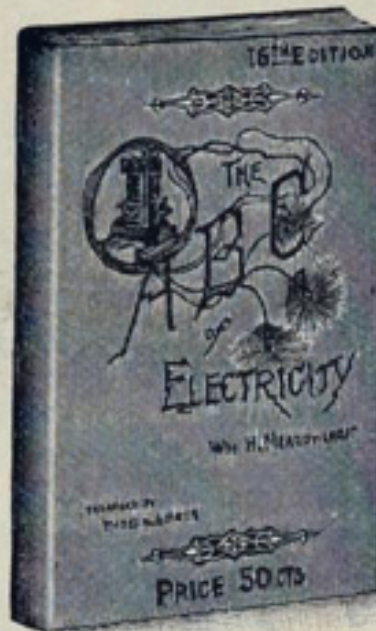
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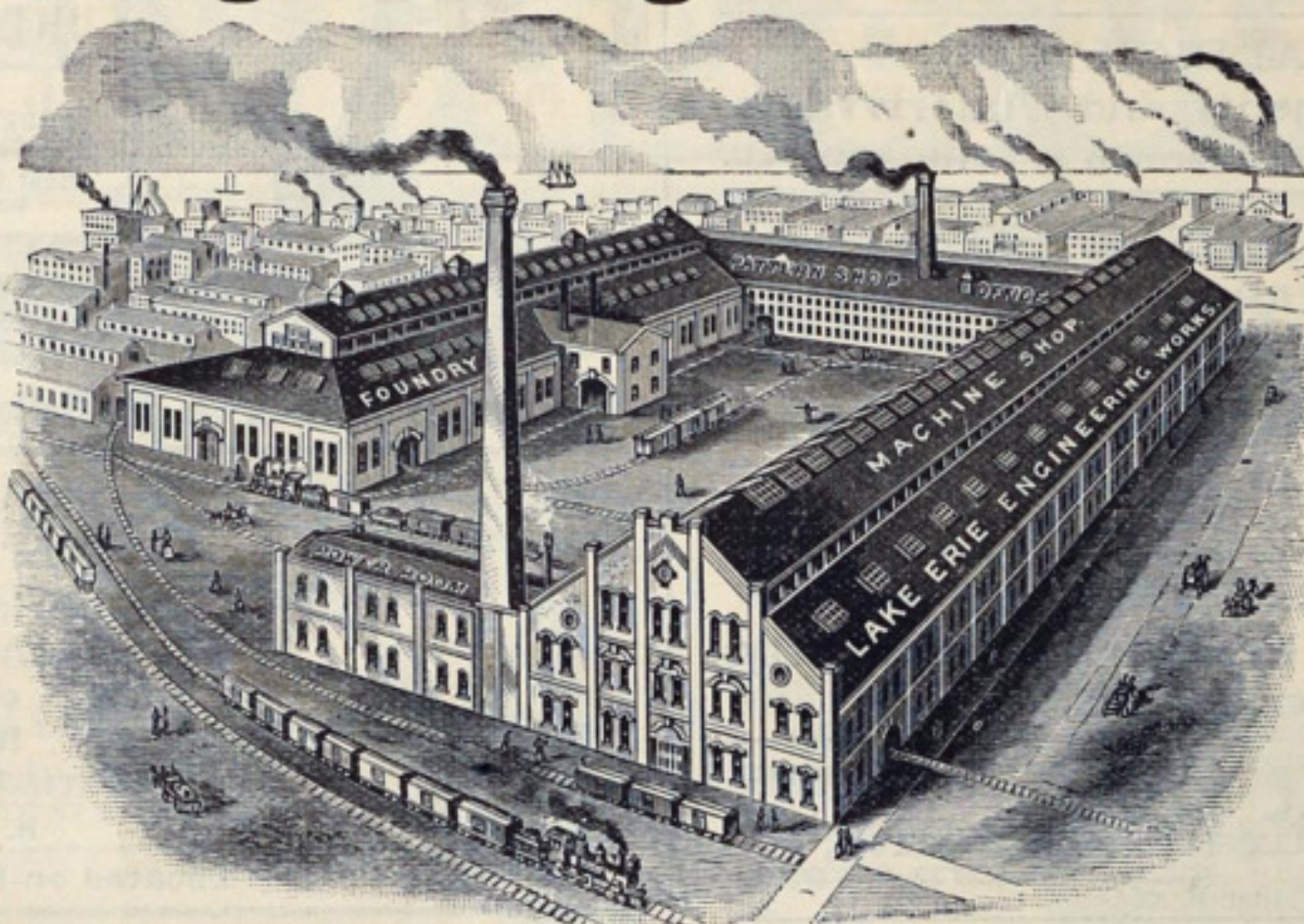


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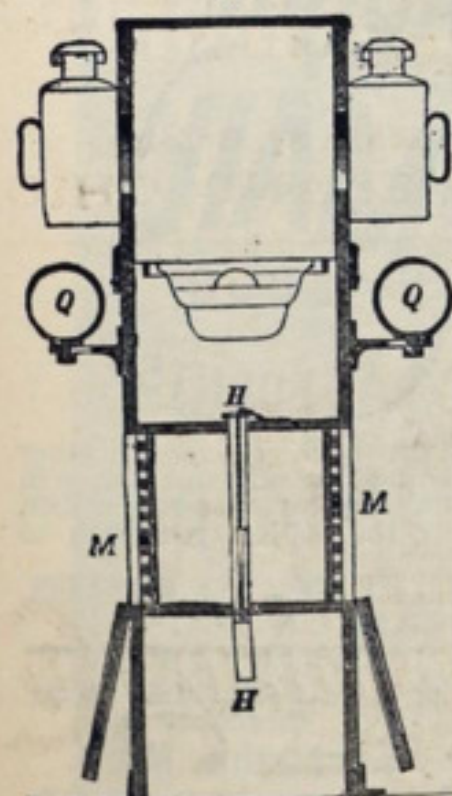
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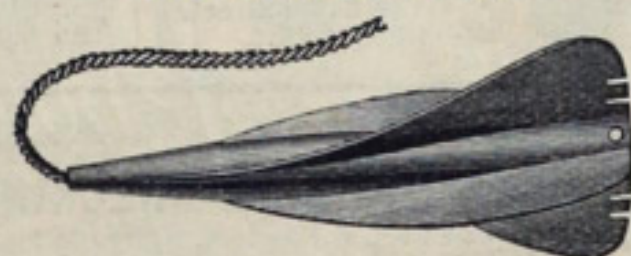
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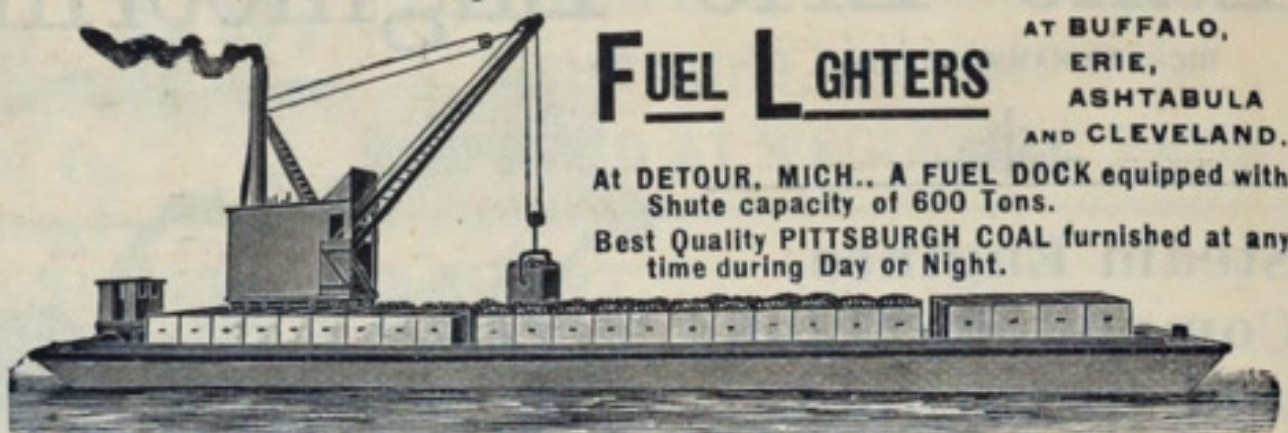
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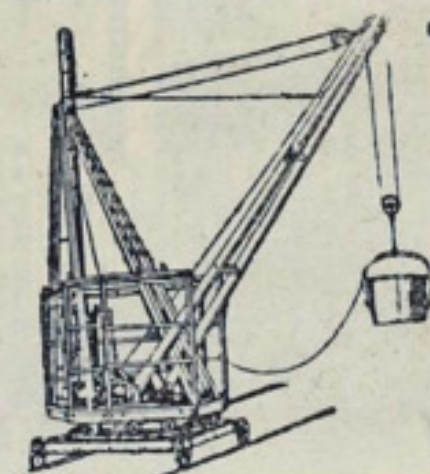
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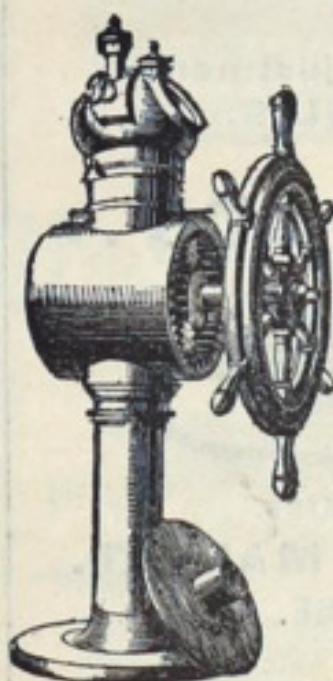
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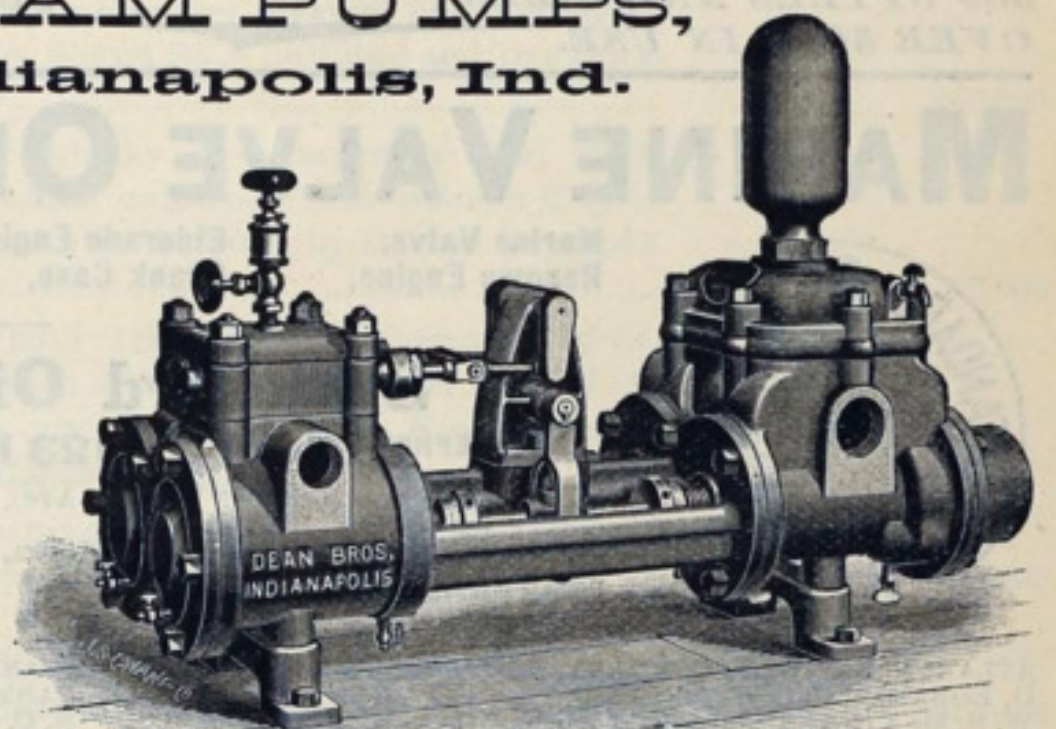
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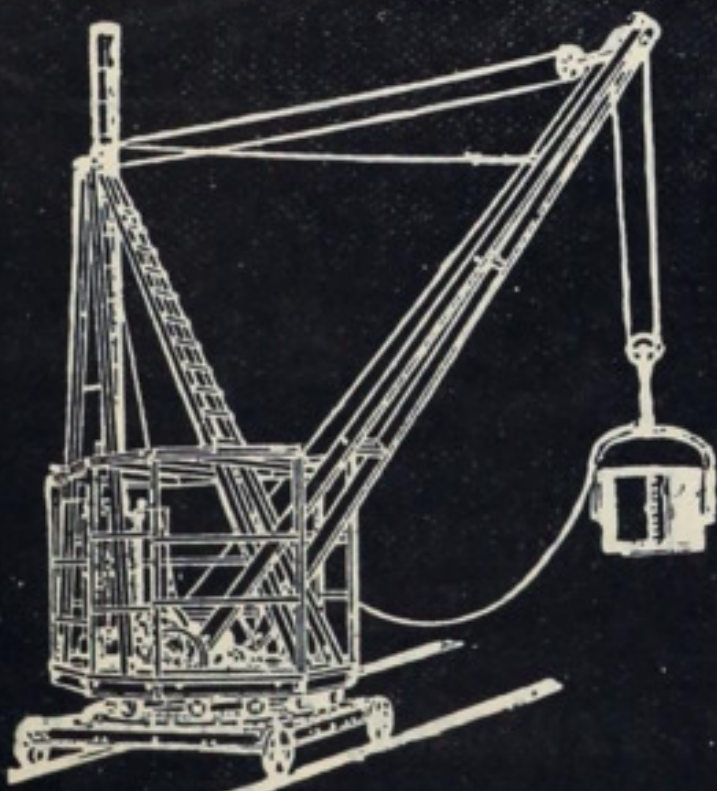
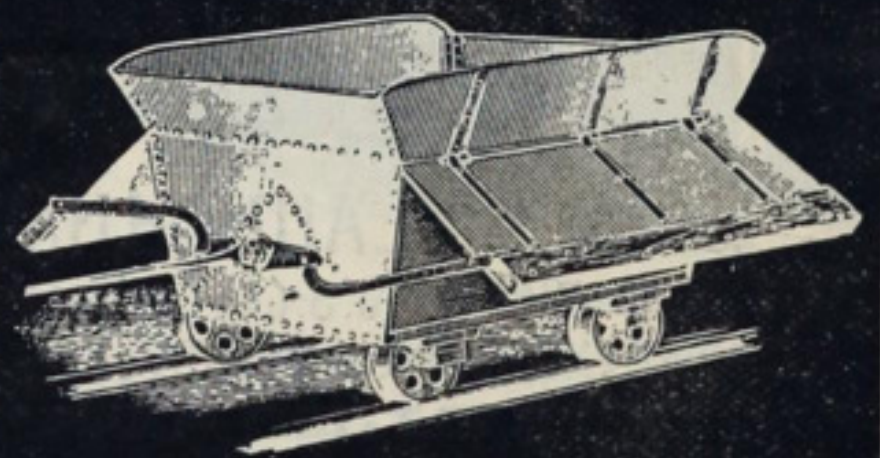
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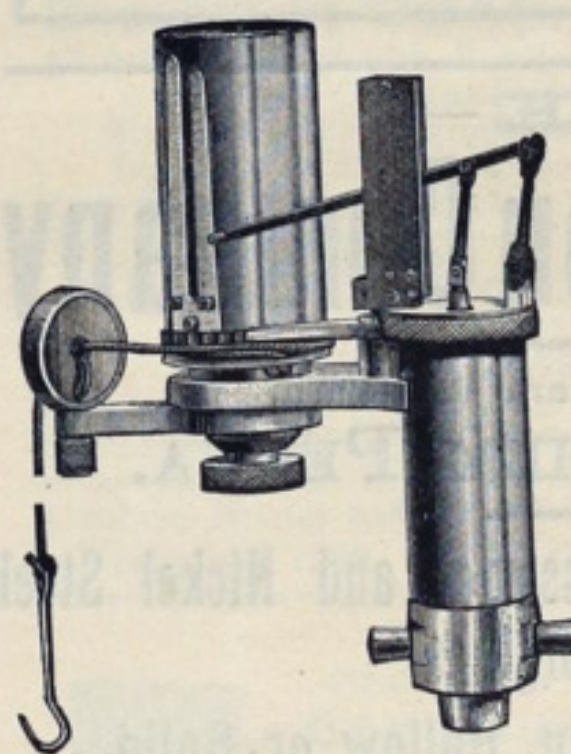
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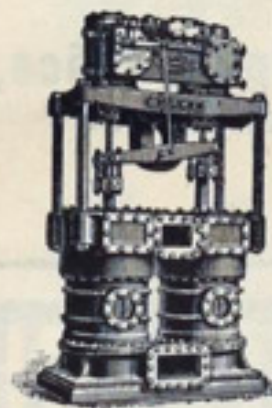
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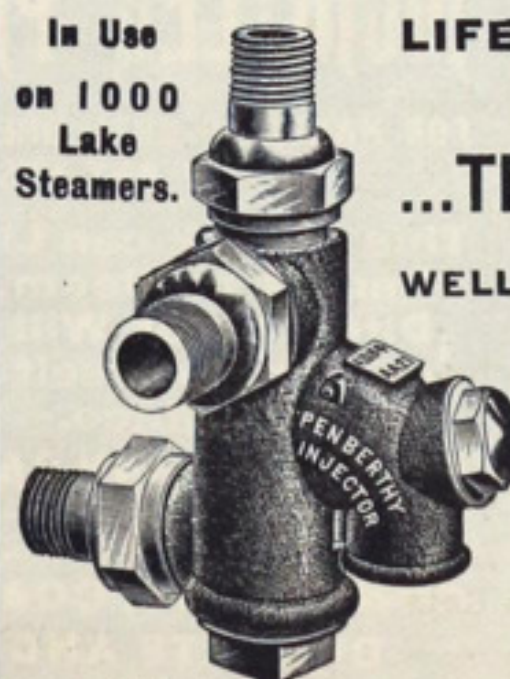
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